

# Planning for Forestry Operations

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## Planning

Timber harvesting activities should follow a well-designed plan with the ultimate outcome being an efficient operation that provides protection of soil and water resources. A forestry professional should be consulted for planning assistance.

Planning should help identify sensitive areas and applicable BMPs to be used during the silvicultural activity. A variety of tools can help in the evaluation of the property and the development of the plan. These tools include aerial photographs, soil survey maps, topographic maps, property or survey maps and timber stand maps.

A field reconnaissance to identify areas of special concern, such as streams, ponds, lakes, wetland sites, boundary restrictions, rock outcrops and nesting sites, should always be conducted to ensure an efficient operation.

Planning not only considers how the timber will be accessed, but also when the timber will be cut. Timing of harvest is one of the more important BMPs.

***Failing to Plan is Planning to Fail***

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The benefits of a well-developed plan and/or written contract include:

- better communication of expectations between the landowner and timber operator
- maximum return from the harvest
- potential long-term benefits in site productivity
- better infrastructure
- economic efficiency
- minimal environmental impacts
- compliance with federal, state and local laws
- enhancement of habitat for wildlife diversity



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## Endangered Species

If you suspect the presence of an endangered species on the property where the forestry activity is to occur, contact one of the following:

- ♦ Virginia Department of Game and Inland Fisheries
- ♦ Virginia Department of Conservation and Recreation, Division of Natural Heritage
- ♦ U.S. Fish and Wildlife Service

These agencies should be able to assist with verification and management considerations. A listing of these agencies can be found in the back of this field guide.

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Once a site evaluation has been conducted, follow these recommendations to plan forest harvesting activities:

Notify the Virginia Department of Forestry on-line or by calling the toll-free logging notification number:

**[www.dof.virginia.gov](http://www.dof.virginia.gov)**

**1-800-939-LOGS (1-800-939-5647)**

***This is a requirement of the law.  
Violators will be subject to a civil penalty  
for failure to notify.***

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- ◆ Things to note in the site evaluation:
  - Slope, aspect, soils, timber, streams, wetlands, access, boundaries, old roads and indicator plants.
  - Become familiar with all of the tract characteristics that will impact logging.
- ◆ Identify and mark on the ground the Streamside Management Zones (SMZs) on all perennial and intermittent streams as indicated on a USGS topographic map.
- ◆ Locate and flag logging decks (landings). These should be on stable soils with a slight sloping for drainage.

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- Locate and mark any logging road stream crossings, if necessary. Avoid them if possible, and if they are necessary, consideration should be given to the type of crossing to be used.
- Locate and mark logging road entrance points from public roads, providing for good traffic visibility in all directions at the entrance.



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- ◆ Locate any other logging road “control” points. These are points at which the logging road must either connect or avoid. Examples: entrance points, stream crossing points, rock outcrops and wetland areas.
- ◆ Locate and flag the logging road gradeline (in the mountains) or centerline (coastal plain). Ideally, the gradeline should be kept at 10 percent or less. Try to locate the haul road on well-drained, stable soils with good load-bearing capacity, such as clay or sandy-clay loams with a solid base.
- ◆ Locate and flag designated skid trails, if necessary.
- ◆ Specify stream-crossing structures and period of time required of the crossing:
  - Ford
  - Modified Geoweb® improved ford
  - Culvert
  - Bridge
- ◆ Determine the schedule of operations and the harvest pattern. Some of the factors involved in this decision will be tract topography, time of year, anticipated weather conditions, road construction requirements, cash flow and marketing allowances (generally determined by the mill).

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- ◆ Specify tract “close-down” requirements. These generally involve implementation of BMPs to minimize erosion and stream sedimentation on the site after harvesting is completed. They include:
  - Re-grading ruts
  - Installing water bars on roads and skid trails
  - Reseeding landings and roads
  - Removing any temporary stream crossing structures
  - Scattering brush
  - Opening ditches and turnouts
- ◆ Close and gate the road to unauthorized traffic.
- ◆ Determine the need for permits and obtain them, if necessary. Check with the local field office of the Virginia Department of Forestry for other agency permit requirements.



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## Streamside Management Zones (SMZs)

Streamside Management Zones are areas adjacent to streams that protect water quality. An effective SMZ will filter sediment and nutrients, maintain desirable water temperature, and provide many of the essential requirements of forest stream ecosystems.

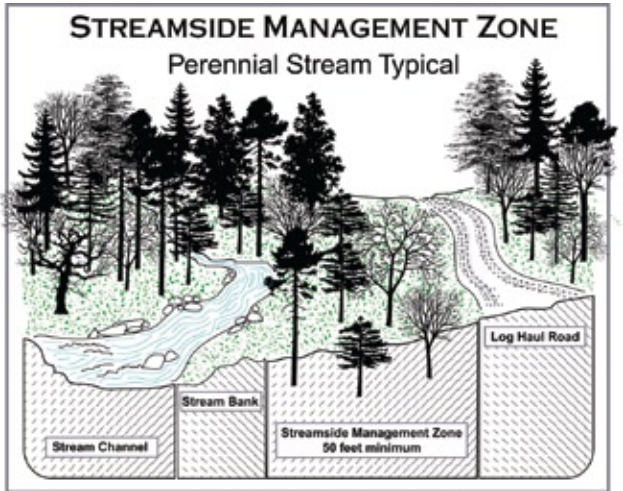


**In Tidewater Virginia,  
all Forestry BMPs must be  
implemented properly according to  
the Chesapeake Bay Preservation Act.  
The SMZ is one such BMP and must  
be left according to specifications in  
this section, or it will be considered a  
violation of this Act.**

SMZs should be left on perennial and intermittent streams, as well as lakes, ponds, natural springs, municipal water supplies, and in areas of karst geology where flowing streams enter caves.



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A 1:24,000 USGS topographic map is a good starting point for identifying major perennial and intermittent streams. Perennial streams are identified as a solid blue line, and intermittent streams are shown as a dotted blue line. It must be remembered that many intermittent streams that do not show up on a topographic map may merit an SMZ. Identifying characteristics of an intermittent stream include a defined stream channel,

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evidence of streambed scouring, and bare soil or rock showing on the bottom of the streambed.

*It is recommended that all SMZs be a minimum of 50 feet in width, measured from the top of the stream bank. This 50-foot SMZ is a managed forest; within this managed area, up to 50 percent of the basal area or up to 50 percent of the forest canopy can be harvested.*

In areas adjacent to tidal marshes, the SMZ will begin at the marsh grass/forest edge and 50 feet inland.

- ◆ Harvesting within the SMZ should minimize disturbance. The forest floor should remain virtually undisturbed.
- ◆ Manual felling, directional felling and mechanized felling can be effectively used provided minimal disturbance of the forest floor results.
- ◆ Water bars, broad-based dips and culverts should be used on skid trails and haul roads prior to entrance into the SMZ.
- ◆ All roads, trails, decks and sawmill sites should be located outside of the SMZ where possible. If necessary, additional practices may be required to protect water quality.
- ◆ Steep slopes, cold-water fisheries and municipal water supplies all need wider SMZs to protect water quality.

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The following table lists those widths:

<b>Table 1</b>			
<b>Streamside Management Zone (SMZ) Width</b>			
<b>Percent Slope of Adjacent Lands (%)</b>	<b>SMZ Width Per Side (ft.)</b>		
	<b>Warm Water Fisheries (all other waters including wetlands)</b>	<b>Cold Water Fisheries (Trout)</b>	<b>Municipal Water Supplies (Streams or Lakes)</b>
0 - 10	50	66	100
11 - 20	50	75	150
21 - 45	50	100	150
46 +	50	125	200

## Planning Tools

- ◆ Aerial Photographs
- ◆ County Soil Survey Maps
- ◆ USGS Topographic Maps
- ◆ Wetland Inventory Maps
- ◆ Natural Heritage database maps (for T & E species)

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## Logging System Selection

A logging system is the combination of equipment and personnel used to harvest timber. Matching the right harvesting system to the specific harvesting conditions can result in minimizing the impact to the harvest site. Effective BMP implementation to mitigate harvesting impacts is dependent on the proper logging system application. Application of the proper logging system to the specific site will also result in higher productivity and lower harvesting costs.

## Logging System Application

- ◆ *Animal* – Animals are best used to skid timber on flat terrain close to existing roads. The system is limited by the weight of the animals and their ability to pull and, in general, can be used to move up to 20-inch-diameter timber on favorable slopes.
- ◆ *Tracks* – Track machines are best used where short, steeper slopes prohibit overland rubber-tired skidding. Yarding distance is limited and these machines generally can be used on slightly wetter sites.

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- ♦ *Skidder* – Rubber-tired skidders have application in the broadest range of logging conditions in Virginia. Skidders are a flat ground system but, with winches, can be effectively used on flat to moderate slopes. This skidding system has limitations when:
  - Weather conditions are unfavorable
  - Skidding distances exceed 1,500 feet due to the cost of road construction
  - Steep Slopes

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- ◆ *Shovel* – Shovel logging is limited to clear cutting when it is necessary to pick up and swing the timber toward the road. Shovels can work in adverse weather, in wet areas and on steep slopes.

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- ◆ *Forwarder* – Forwarders are best applied where longer yarding distances in fairly gentle terrain are needed to avoid expensive truck road construction.
- ◆ *Cable* – Cable logging systems are best applied where excessive slope would require ground-based systems to build an excessive number of excavated skid trails.
  - Requires excessive slopes to operate efficiently
  - Yarding distances of up to 1,500 feet are not uncommon
  - Can operate under adverse weather conditions

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- *Helicopter* – Best applied when road costs are high; large volumes must be moved in a short period of time; sawtimber only is planned for the harvest; the ability to harvest in adverse weather is needed, or when the landowner's objective is to minimize the environmental impacts of harvesting. Maximum yarding distance is 6,000 feet.





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Effective BMP implementation for timber harvesting operations needs to consider appropriate logging system selection and harvest planning. Use of the proper logging system for the specific logging conditions can result in lower costs and lower environmental impacts.

Proper planning, from the location of the roads and decks to the type of logging system used, is essential to reducing the impact of the operation on the property.



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